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Eric J. Iversen
Fundamental and contextual issues involving the strategic use of IPRs

Eric J. Iversen
STEP
Hammersborg torg 3
N-0179 Oslo
Norway
www.step.no

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STEP gruppen

Hammersborg torg 3, N-0179 Oslo, Norway
Telephone +47 2286 8010
Fax: +47 2286 8049
Web: http://www.step.no/

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1. Introduction: Purpose of note

In Norway, there is a noted need to address intellectual property rights (IPRs) and their changing strategic role at the national policy level. The importance of IPRs stems not least from the fact that the international competitive environment ('playing field') continues to evolve according to several general sets of pressures. Changes in markets (a tendency towards the international) and changes in relevant areas of knowledge (technologies are changing, areas of knowledge are shifting) have led to the emergence of new rules and new practices involving intellectual property rights. A tendency towards a more explicitly knowledge-intensive environment and a more international setting reasonably suggest those actors who are knowledgeable and skilful in their decisions about IPRs can better develop an advantage over competitors.

This note presents empirical and theoretical information to help orient a consideration of the strategic role of IPRs in this context. In particular, the objectives of the note are:

I. To substantiate the need for sustained attention at the national level concerning the strategic-dimension of intellectual property rights;

II. To offer helpful ways of thinking about IPRs and their larger role in the innovation system;

III. To address questions of what is known (and not known) about IPRs in Norway;

IV. And to introduce what other relevant bodies are saying and thinking about these issues.

2. Preliminary observations

Our opening premise is that there is a pressing need to improve the quality of use and the conditions for use of intellectual property rights in Norway. Our first objective is to briefly explicate factors that argue for spending greater attention on IPRs. Here, we review some factors that make a more active, better informed appreciation of IPRs increasingly important for private enterprises, for public support agencies and in the regulatory framework—in short, for relevant areas of the innovation system in Norway. These observations will also help foreshadow some of the points to be dealt with in greater detail later in the note.

2.1. General factors: There are several features of the present economic climate that actualize an appraisal of how IPRs are approached and used domestically. Some features help make certain IPRs more relevant. Others affect the way IPRs are administered and used, making vigilance about IPR-related practices more important. Here are several factors that are influencing the position of IPRs in general:

a. The economy is increasingly based on the ability of firms and economies to create and commercialize new knowledge while capturing profits from this knowledge-based process. The increase in knowledge-intensity makes IPRs, which can be instrumental in capturing profits (especially in certain 'frontier technologies'), more important.

b. In certain cases, the costs of R&D are reportedly rising while product cycles are shortening. This combination, especially in cases where costs of imitation are also low, help to make IPR-based strategies more attractive.

c. The growing internationalization of markets and the prevailing economic prosperity promote not only increasing competition but also increasing co-operation between economic actors. These dynamics also encourage the use

of certain IPRs both to facilitate cooperation as well as to protect competitive advantage.

d. And changes in international IPR systems together with the challenges of new technologies increase the importance of updated and proactive IPR strategies both for policymakers and decision-makers in firms.

2.2. Other efforts elsewhere: Another general argument for increasing knowledge and awareness about IPRs in Norway can be made with reference to relevant efforts in other countries (see last section). One aspect of this is largely retrospective. Based on the factors above, countries like the US and Sweden have long placed strategic dimensions of IPRs high on the agenda. It becomes natural to ask why, then, not in Norway (see below). A more current aspect is the ongoing work on IPR policy issues by governmental agencies in which Norway has an interest (the OECD and the EU). This activity poses an opportunity to involve, and to evolve, Norwegian attention on this area.

2.3. General Norwegian features: Norway is a small, open economy typified by a small-home market and a high proportion of small enterprises. In a current state of pervasive internationalization of markets and increasing knowledge-intensity of technologies, Norway should be a pioneer in using IPRs to leverage its knowledge bases in international arenas. In contrast, there are many (mainly anecdotal) indications that Norwegian attitudes to IPRs are less geared to present circumstances and more geared to past market-situations in which low intensity use of IPRs was better justified by less opened markets.

2.4. Indications from existing analysis: Existing analysis has noted the lack of a visible, coherent, concerted policy-discussion about intellectual property rights and their changing socio-economic importance in Norway. In 1995, a Conference on IPRs and Norwegian industrial policy looked at the Intellectual Property-system in terms of how it can contribute to "creating better conditions for innovation activity in the Norwegian system in terms of increasing competitiveness and of generating economic growth."[1] It concluded that there was a need to improve the working (particularly the inter-working) of the IP-system and to vitalize IPR awareness and knowledge in Norwegian users.

More recently, a report to the WIPO about the IPRs in Norway[2] made a set of recommendations to address identified shortcomings in the Norwegian environment. First, it specifically pointed to the need to vitalize the national discussion of IPR issues and to work towards a more unified policy on questions that involve the strategic use of intellectual property rights. It argued for a forum that would promote an informed, issue-based discussion about IPRs among relevant actors distributed in the Norwegian innovation system. It noted lack of such a discussion has a generally negative effect on awareness and knowledge throughout the Norwegian system.

3. Basic dimensions of intellectual property rights

A clear idea of certain aspects of IPRs as the focus of analysis should be introduced. This section briefly discusses the diversity and complexity implicit to the IPR focus.

3.1. Diversity

It is often forgotten that the term intellectual property rights includes a diversity of instruments. The term *IPRs* pertains not only to patents (for which it all too often used synony-

[1] Nærings- og energidepartementet (NOE) arrangerte 4. mai 1995 seminaret << Immaterielle rettigheter (IR) som næringspolitisk virkemiddel>> i Oslo.
[2] Iversen, Eric. Norwegian SMEs and the IPR System: Exploration and Analysis. (2001) The STEP-Group

mously): nor only to patents, trademarks and industrial design. The TRIPS agreement, for example, extends the list to include:

- Patents
- Trademarks
- Copyright and related rights
- Industrial Designs
- Trade-secrets and know-how
- Circuit topographies
- Geographical indications
- Control of anti-competitive practices in contractual licenses.

In addition there are other related sub-issues such as defensive disclosures that further complicate the picture. For most purposes, this diversity is not helpful in and of itself. The question is what IPRs are important for Norwegian economic interests today as well as tomorrow. In this sense, becoming trapped in a discussion where IPRs are equivalent to patents will quickly become too much of a simplification. Such a discussion will tend to exclude the current needs of many sectors of the economy and will be unable to adjust to new realities.

3.2.Complexity

IPR regimes are complicated creatures. And they are creatures that are continually adapting over time. At this point in history, there is little doubt that they are tangibly changing and have been for a couple decades. Beyond acknowledging this fact, we should recognize a further couple dimensions that makes this change important.

Our next observation is thus that the IPR system is comprised not only of the legal framework of the intellectual property rights system. It also includes a set of institutions and agencies that are involved in administering the IPR system as well as those that are involved in advising or otherwise assisting individual actors at a stage when IPRs might be relevant to them. Five levels of the wider IP-system should be distinguished:

1. the legal/statutory framework;
2. judicial interpretation: how the courts ultimately rule
3. administrative practice: what qualifies for grant or registration.
4. the organizational-level strategies and practice (firm-level and, where relevant, the institute-level)
5. in addition, there is the level of the support-structures, agencies who provide financial and advisory services etc.

Each level involves a set of complexities unto itself. And each is susceptible to change: indeed, each is demonstrably changing. The observation we want to make here is that these levels are engaged in what can be called ‘co-evolution’: changes at the level of the firms for example are contingent on changes in the institutional set-up and vice versa. The exertion of mutual effects between levels introduces a further complicating dynamic that needs to be acknowledged. The first implication of it is that there is a need for coordination (at least a measure of oversight) at the policy-level. The second is that simplistic policy measures will not necessarily have their desired effects, but might boomerang.

This whole situation is further complicated by the fact that these levels are not prima facie the same for different jurisdictions. In fact, even the most basic level of the legal framework remains significantly different for neighbouring states. We acknowledge the different attempts to harmonize IPR regimes at the regional level (through the EPO for example) and the international level (the PCT system, Triad-harmonization, relevant aspects of the WTO treaties). Indeed, the WIPO is presently trying to orchestrate the negotiation of the framework for a 'global' patent system. Despite such attempts, however, an added dimension is that different rules, interpretations and practices are endemic to different jurisdictions. The conscious drive towards convergence must fight against the persistent drift towards greater diversity, which is inherent in the IPR regimes. In fact, as countries react to changing conditions they are faced with, one seems to see increasing diversity.

The Norwegian administration is of course in a unique situation as being aligned to the European environment but not bound. The salient observation from the Norwegian point of view is that its IP-system is sensitive to ambient changes but that it is not necessarily sufficiently reactive at the different levels (especially level four and five). The lesson is that things are complex but they should by no means be abandoned to existing forces. This means that it is incumbent upon relevant decision makers to try to keep on top of the complexity.

4. Premises: IPRs for whom and for what

Any national or other high-level strategy in this area should be based on a solid conceptual and empirical understanding of the role of IPRs in the wider innovation system. Anchoring the discussion to rationales for the IPR system and its use is especially important in the changing environment, in which there is a certain tendency towards hyping intellectual property. This can be dangerous, perhaps especially in Norway.[3] The purpose of this section is to sketch some basic perspectives of the role of IPRs in the innovation system.

4.1. IPRs and knowledge generation, diffusion, and use

At base, IPRs can be seen as a set of public policy instruments whose design it is to promote the generation, the diffusion, and the exploitation of new knowledge in the economy. The basic rationale is familiar enough. IPRs involve an essential trade-off, which is most pronounced in the case of patents. Temporary exclusive rights are granted to the applicant to exercise his invention, provided certain qualifications. In return the grantee agrees to freely distributing details of the invention. The basic public policy point is:

1. To provide an incentive to invent, thus promoting the generation of new knowledge;

2. to disseminate information about the invention thus facilitating the spread of knowledge to subsequent and complementary inventors.

In terms of the economy as a whole—which consists of start-ups, existing enterprises, academic and research-institutes etc—there are therefore costs and benefits that accrue in aggregate. On the one hand, IPR-protection brings with it social costs in the form of higher prices (monopoly pricing): on the other, IPRs provide the economy an incentive to innovate (based exactly on the prospects for the innovative firm for monopoly pricing). The monopoly profits

[3] The WIPO Report notes, <<One thing that can be detrimental to a country's careful consideration of the issues related to IPRs and competition is the uncritical acceptance of overoptimistic and unsupported conclusions about what IPRs can do. Norwegian actors are certainly not less skeptical than most about what IPRs can and cannot achieve. Undocumented rhetoric that uncritically heralds a 'pro-patenting' era will therefore meet the skeptical attitude that is established in Norway, and perhaps reinforce it. We emphasize that a balanced and informed discussion is needed. adapting the IPR system for better use.>> (p 121)

provided by IPRs may have the added advantage for the economy as a whole if it is ploughed back into higher levels of production and innovation.

IPRs have a role to play in organizing knowledge production, in promoting new R&D, in promoting further utilization as well as coordinating use of new knowledge, while avoiding underutilization losses. David (1993) emphasizes the following dimensions of this role:

a. The importance of full disclosure of information in patent applications. This allows for dissemination, verification, and application by others engaged in intellectual pursuits;

b. The importance of "allocative efficiency". The provision of efficient focusing of research effort entails, among other things, the avoidance of overfocusing effort on the same research; the avoidance of "deadweight burden" of monopoly. This is the case where rights become too strong and bar close substitutes and raise royalties, while lowering the benefit to society in general and consumers in particular; and the importance of achieving the coordination of research activities;

c. The importance of avoiding "unproductive competition for monopoly profit" (Kitch, 1977: Beck, 1983) including, wastage of resources on premature invention, duplicative R&D, unnecessary substitute inventions and excessively rapid spending on research.

4.2. Value of IPRs

There emerges a question of efficiency between the costs and the benefits of the system. For the economy as a whole, the social benefits of the system should be greater than the costs. For the individual enterprise, the inclusive cost of IPRs (search, application, monitoring, enforcement, etc) will be weighed in a certain sense against benefits.(perceived or real) One thing that does become quickly apparent from such a hypothetical treatment however is that there are different types of 'value': the individual right holder and society as a whole will have different ways to tally their benefits. And further, each might have a variety of different ways to account benefits and costs.

Different ways to appreciate 'value' of course influence the willingness to seek IPR protection, so this deserves some attention. So let's consider the case of an innovative enterprise. The individual firm generally[4] competes for market share by asserting the distinctiveness of its products/services in terms of technological originality and/or in terms of distinctiveness in the eyes of the customer. While engaged in generating new knowledge in order to do so, however, this endeavour can become vulnerable to imitation especially as it nears commercialization. In this situation, the firm is confronted by a choice of how to appropriate the economic benefits of this process. It is in this context that IPRs can become relevant. IPRs can augment the postion of a firm by helping it to protect the distinctiveness of its products and/or services both in terms of the underlying technological originality— notably through patents and utility models—and in terms of their distinctiveness in the eyes of the customer —notably through trademarks and industrial designs. The use of relevant types of IP-protection can potentially aid the competitive position of the firm by affording it the room to cultivate its distinct qualities without threat from direct competition from imitations.

One reasonably expects that this agent is primarily interested in converting IP into commercial profits. However, this conversion— and the role of IPRs in securing it— are themselves

[4] In most circumstances, besides those of purely price-based competition

not especially cut and dried phenomena. The individual agent will only be able to assess the market value of an IPR in retrospect and even then, not with any accuracy. The 'value' derived by IPR holders will necessarily vary from case to case and over time. 'Value' will be more or less unique for the nature of the intellectual property involved, the dynamics of its market(s), the ability of the assignee to realize the potential value, and not least his strategy vis-à-vis IPRs or his ability to enforce his IPRs etc. Nonetheless, certain types of IPR protection show strengths and weaknesses in conjunction with different types of technology and different types of IPR strategies (e.g. combining trademarks in conjunction with patents) work better than others for given cases. As technology changes and markets with them, so too do these relationships.

But there will also be other senses for which IPRs hold 'value' for the assignee which do not immediately involve dollar signs. Signals to the market, for example, is one important function with no immediate price-tag (although it might affect stock-market prices). Another is that strong-fences make good-neighbours in R&D collaborations: IPR portfolios help keep such fences strong (though a group of IPR lawyers is a complementary asset). Within the innovating enterprise, IPRs are valuable for reward-schemes which are not necessarily linked to the ability of the company to capitalize on the inventions covered. Another area where IPRs have value that is at least a step away from the market is in academic institutions. Some universities (mostly in the US) consciously build up patent portfolios and brand-names. Here, there are many motives which need to be understood. It is left to the firm to decide whether the individual rights type is applicable (whether he qualifies), whether it is effectual (they discourage imitation), and whether is attractive (its cost of application, maintenance, enforcement is less than its benefit).

4.3. Other observations

Thus, costs and benefits will vary for different actors and for different rights-types. A basic observation, however, is that the question of the value of the IPR system as a whole therefore stands in a certain state of tension with its value for the specific firm. It is important that this tension be appreciated by the observer.

In this light, the national IP system should work from an appreciation that use of IPRs needs to be geared to the competitive situation of the firms. Low intensity competitive situations, in general, suggest low intensity utilization of active IP strategies. Areas where the competitive-environment is dynamic suggests more dynamic use. It is therefore not impossible that the traditionally modest levels of IPR utilization in Norway have reflected the competitive realities of its markets. Notwithstanding, decision-makers in enterprises and in relevant positions in the IP-system should also be aware that all competitive situations are subject to change.

5. Facts about IPR use in Norway

A third objective of this note is to consider what is already known about IPR awareness and utilization in Norway. This will help to prioritize what we need to learn. The general message is that there is a need to move beyond aggregate patent-data, both to other rights-types and to more meaningful, contextualized analysis that moves in the direction of the firm-level. This means disaggregated data in conjunction with more qualitative analysis. And this means greater sustained commitment.

Our first observation is that we know very little about how IPRs are approached and used in Norway, but that we think we know even less. Our knowledge is of course limited enough. It is limited to an overwhelming degree to patents. However, we tend to overlook more nu-

anced analysis in favour of easily presented aggregate comparisons. For example, there are several studies that are of more academic interest that are overlooked.[5]

The situation can be briefly characterized as follows:

1. There is a general lack of research in Norway on intellectual property rights
2. To understand important aspects of IPRs, one needs to understand the context in which IPRs are used. Important factors include R&D intensity, market-structure and dimensions of the competitive environment support structure performance, business strategies, etc)
3. Contextual work that views IPRs in terms of the firm-level strategy is virtually non-existent in Norway
4. There is a focus on patents, particularly a penchant for comparative patent statistics to the exclusion of other information.

5.1. General patenting patterns

The empirical work tends to recognize three general dimensions of Norwegian IPR use:

1. Levels of domestic patent applications are relatively low in volume,
2. Foreign enterprises dominate patenting in Norway, and,
3. There has been a rise in domestic patenting during the past few years.

5.1.1. General patent propensity: OECD comparison

A closer look at Norwegian propensity to patent in an international comparison reveals that domestic patenting is humble in Norway, but that it has improving . Correcting for basic population-differences,[6] the OECD numbers indicate that domestic patenting in Norway is comparable to the European average, and that it grew considerably during the 1994-1996 period.[7] The level is however considerably behind the rest of the Nordic average, although differences in industrial structure may influence this. The Norwegian level is on par with that of Denmark, in this comparison.

5.1.2. Patent propensity among 'innovative' firms: Community Innovation Survey comparison

A more natural basis to consider patent propensity is in terms of the 'innovativeness' of comparable firms: if Norwegian firms are less innovative than other firms it is natural that patenting levels will follow. According to the Community Innovation Survey (CIS), 15% Norwegians firms reported products based on innovations that were 'new to the market', and therefore potentially patentable. This a low level compared with other countries and this low level corresponds to a relatively low propensity to patent.

However, a raw comparison of the CIS data on how often innovative firms patent in different countries indicates that "innovative" Norwegian firms, for whatever reason, apply for patents less often than any other European country, save Portugal![8] This impression however should be treated with considerable caution, as it does not take into consideration a series of factors

[5] Names here include: Basberg, Pakes and Simpson, David and Olsen, Maurseth, Iversen.
[6] The coefficient is based on the number of applications per10,000 population. The differences for patent systems are not. See especially Japan, whose high coefficient is at least partly based on its particular system. The effect of the EPO system for the domestic patenting averages of affiliated countries is not known.
[7] Source: OECD, EAS (MSTI database), November 1998. Updated numbers are expected to show a similar levels.
[8] CIS 2 Eurostat: Figure 2.2.10/ Number of innovators having applied for at least one patent as a share of innovators by country, 1996. See also WIPO report, page 67.

that will fundamentally affect whether patenting is an option for these firms in these different countries.[9] These factors should be considered more closely in future analyses.

5.1.3. Domestic patenting during the 1990s

Norwegian participation in domestic patent application grew robustly from the first five-years to the last of the 1990s. A total of 12,984 Norwegian applicants were involved in 11,183 patent applications registered by the Norwegian Patent Office in this period. The number of applications with Norwegian applicants grew some 30% from the beginning to the end of the decade.[10]

This growth was different for different technical areas.[11] The figure shows where Norwegians patent most, and indicates where domestic patenting is changing. It is in the largest technical groups—Process Engineering and the broad Mechanical Engineering classification—where the least growth is. These grew respectively at 20% and 22% across the two periods. Process Engineering sank from 18% of total Norwegian patenting in the first period, to 16%, while Mechanical Engineering dropped from 55% to 52% in the late 1990s.

5.1.4. A closer look at the propensity of foreigners to patent in Norway

Many observers note with alarm that most patents (about 80%) applied for in Norway originate in other countries. Table 3 in the annex breaks patent applications down according to applicant country and main technical area of application for 1993-2000. First we should appreciate that this is a common tendency for small countries, for example Finland, and that it is largely caused by the preponderance of foreign chemical/pharmaceutical patents. A great deal of the imbalance is explained by American patent applications in the area of polymer chemistry. Nor is the imbalance necessarily a problem, if Norwegian agents use information in the patent applications to their advantage (e.g. find international partners, monitor developments in their field).

5.2. Unique full-count analysis: Patents and Trademarks

One source of analysis that is new and exiting is the firm-level data covering both patents and trademarks applied for in Norway. These data are unique in that they allow us to study whole populations of enterprises who do seek patents and/or trademarks against the remainder of the populations who do not. These data can be improved, and the WIPO report points to ways the underlying databases could be improved (keyed to enterprise number) and extended (for example to design rights).[12] Here we provide a look at the results from the WIPO Report.

5.2.1.Patents

The WIPO-report shows that:

- In absolute terms, roughly the same number of patent are applied for by domestic SMEs as by large domestic companies, while the majority of applications come from independent applicants.

[9] We emphasize that many factors that will shape the propensity to patent, not just an 'attitude'. A major consideration is such a comparison is whether the industrial distribution of the respective countries are corrected for. In other words, does the result reflect the fact that Norwegians are less involved in industries that are more prone to patent?

[10] See table in Annex or WIPO report

[11] These areas are based on primary patent classes (IPC), which have been converted to technical areas by a Correspondence key. See Annex for more details.

[12] See recommendations 1.3. To improve Norwegian IPR databases as well as 1.2. to improve the analysis of IPR questions in Norway.

- The number of patent applications have risen strongly during the 1990s: the strongest growth has in fact been the population of applications involving SMEs.
- In relative terms, large enterprises apply on average 40 times more often than micro enterprises; 20 times more often than small; and eight times as often as medium-sized enterprises for patent-protection. On average, a little more than one domestic application is made every year per 100 Norwegian firms. (Annex, Table 4A)
- Larger entities tend to apply for more than one application to a much larger degree than smaller firms. In general, the smaller the firm-size, the fewer the average applications are made.
- The applications of large firms differ from those of smaller applicants in terms of technology. While forty percent of Norwegian applications for chemistry and pharmaceutical-related-technologies were from large enterprises, more than eighty-five percent of the applications for electrical engineering were from the other size-classes.
- The propensity to patent is fundamentally related to the key-product (NACE-classification)of the applicant. Applicants involved in electrical equipment are 3 times, offshore enterprises 10 times, and R&D service enterprises 20 times more likely than average to apply for a patent.
- There are major differences in the geographic distributions of patent applicants. Large applicants tend to concentrate in urban areas.
- A major difference between smaller and larger applicants involve the 'success' of their patent applications. The study shows that the level of non-grant—especially cases in which the applicant withdraws his application—is dependent upon size. SMEs withdraw one in three application while independent applicants withdraw more than half of their applications.

5.2.2. Trademarks

The WIPO report shows that:

- The volume of applications from Norwegian applicants grew more quickly than patents (nearly 80%) from the first to the latter half of the 1990s.
- In absolute terms, applications from large enterprises made up under thirty percent of all applications during the decade, and their volume grew least quickly. The volume of SME applications was higher, and it grew more quickly.
- In relative terms, an average of eight applications were filed in a five-year period per 100 firm in a given year. The propensity was highest among the largest firms, with over 104 applications per 100 firms. The equivalent was three for the smallest firms, eight for small, and 17 applications for medium-sized firms. (Annex, Table 4B)
- The occurrence of multiple applications is again related to size. While only 28% of the smallest firms identified were involved in 2 or more trademark applications, the equivalent for Large Enterprises was nearly 90%.
- Industrial activity strongly conditions applications for trademark-registration, in a way that complements that of patent-applicants. Enterprises in Basic Services (NACE-classification) dominate trademark applications, while many others come from Business Services and ICT Services.

- Trademark applications are first and foremost an urban phenomenon. Oslo and environs, Trondheim, and Bergen account for nearly three-quarters of the total number of Norwegian applications.

6. What are other governmental bodies doing?

This note rounds off by noting activities in some governmental bodies in pertinent arenas. Here we merely allude to ongoing activity: more dedicated study is required here.

6.1. The keynote is the USA

The work on strategic issues of IPRs has long been on the agenda in the USA. For example, 10 years ago the National Research Council (Office of International Affairs)[13] convened a set of experts to consider, 'global dimensions of IPRs in science and technology.' A key question was 'what kind of international IPR regime would be in the long-term national interests of the United States' (Wallenstein et al, 1992).[14] This particular depth-sounder, which has since been followed up, considered 'policy vision, IPRs as a trade-issue, and tried to understand its influence on collateral policy questions. This work can be very instructive for Norway. A substantial project entitled "Intellectual Property Rights in a Knowledge Based Economy" has recently been initiated with the intention, "to guide IPR policy over the next decade and beyond."[15]

6.2. OECD

The OECD is involved in an exercise with a Focus Group on Innovation and IPRs.[16] The TIP project part of this work is entitled 'The strategic use of IPRs'[17] and involves the use of patenting and licensing in Public Research Organizations. The UFD commission the STEP-Group to carry out a survey in this context. The Norwegian survey was completed in April and will be incorporated as a chapter in the OECD work, which is expected to be finished in December 2002.

6.3. Nordic Industrial Fund

There are a couple of ongoing projects in the Nordic Industrial Fund that focus on IPRs. One is a project entitled <<SMEs & the new role of academic research>> which focuses on the relationship between public research organizations and SMEs (including start-ups and spin-offs). The countries involved are Norway, Finland, Sweden, and Denmark. This one year project, which is just starting up, will among other things:

- Compare regulatory, institutional, and cultural (=attitude) factors that affect commercialization of academic research and university-industry interaction.

- Compare the different countries policies and expectations of their policies

[13] This council is fundamentally different from Norges Forskningsråd: it falls under the National Academy of Sciences, which is a private nonprofit self-perpetuating society.
[14] Wallerstein et al (eds) (1993). The global dimensions of intellectual property rights in science and technology. National Academy Press: Washington DC: 12.
[15] http://www7.nationalacademies.org/step/STEP_Projects_Intellectual_Property_Rights_Project_Info.html, under the—somewhat confusing— auspices of the Science, Technology and Economic Policy Board (STEP) of the National Research Council (NRC)

[16] DSTI/STP (2002) 15.
[17] A document entitled "Innovation and strategic use of IPRs – Issues paper" (OECD DSTI/STP/TIP (2001)4.

- Assess what we already know about how academic research is already being commercialized in these different countries. We will use a number of case studies from each country to illuminate different positions.

6.4. The European Union

A recent and ongoing European initiative is worth mentioning. The Trend Chart on Innovation & IPR has resulted both in a basic overview of "trends" in the policy theater (2000) as well as a conference on benchmarking of intellectual property rights (2001). This latter involved a statistical survey. The policy work reflects several of the policy-level currents in this area. In addition, this trend chart also reflects a degree of enthusiasm for so-called "new trends" that should be treated with caution by decision-makers contemplating the involved question of how to adapt their IP-systems. In addition, individual initiatives such as that involving an insurance plan for the EU area, are underway.

7. Conclusions

In the current environment surrounding strategic use of IPRs, it has become important that policymakers are conscious of the challenges and opportunities and have a realistic (and comprehensive) appreciation of them. Other countries—notably the US— have long been concerned with strategic implications at the national level. In Norway, the task of elevating intellectual property rights onto a national agenda and the preconditions for doing so are considerably different. But it is arguably more important that a small open economy takes a more active stance here.

We end by highlighting some considerations:

A. it important to start from some conceptual and empirical basics, and to move towards greater knowledge about the dynamics that shape if and how Norwegian agents use the IPR system.

B. In this respect the WIPO report (2001) provides a good basis for further work. It both frames issues related to the country's large population of SMEs and it provides empirically based recommendations that are relevant to the IPR-Forum's focus. Some can be listed here:

- Initiatives to improve the IPR policy and strategies of central institutions of the support structure
- Recommendation 3.1. Measures to promote greater practical knowledge about the IPR system among SMEs
- Recommendation to evaluate the University-Industry link
- Initiatives to improve SME security in litigation cases
- Recommendation to promote the coverage of intellectual property matters in the national educational system.
- Recommendation to improve the analysis-capability of IPR questions in Norway.

There are also some considerations to note:

A. It is important to recognize that IPRs are more than patents and IPR strategies are more than purely a question of protection.

B. The IP-system includes legal, advisory and other supporting services that help economic agents to use the rights to better manage and develop its own intangible resources in a competitive situation.

C. When addressing the question of how the IPR system can **better** help Norwegian agents, that one does not interpret "better" to mean "more often". The assumption that Norwegians should use the system more frequently is potentially misleading to the agents involved and counter-productive in promoting the real benefits of the IPR-system. At issue, is how the firm can integrate intellectual property rights into its business to greater effect.

D. It is important to work both on an understanding of the national situation and its context, but it should do so with a wider understanding of theoretical considerations and of international trends.

E. A final consideration involves the importance of collecting reliable information with which to diagnose the actual situation. One of the main challenges is to find reliable information both about Norwegian economic agents, their present use of the IPR system, and their actual attitudes towards it.

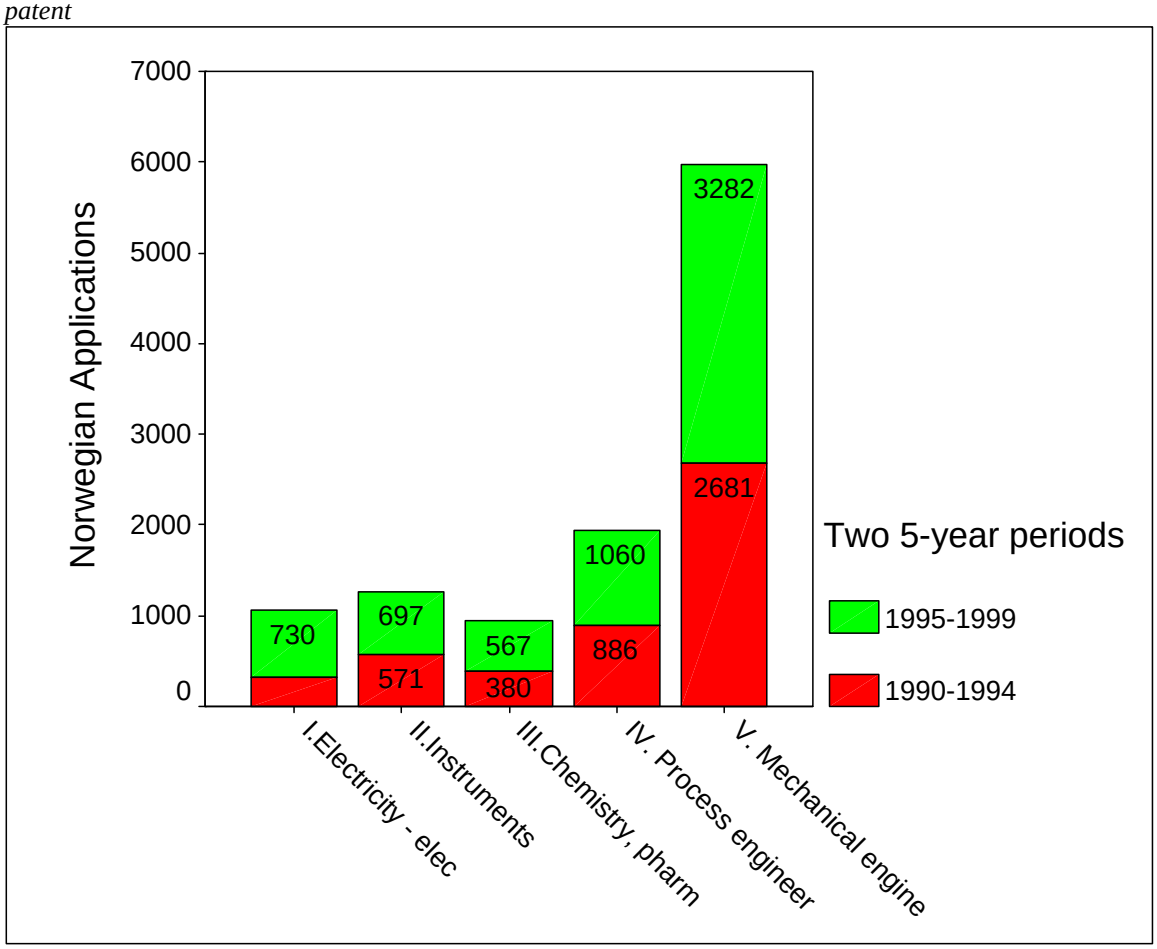
Appendix

Table 1. OECD's Inventiveness coefficient (resident patent applications/population) 3-year averages

	1991-1993	1994-1996
Austria	**2.7**	**2.3**
Belgium	**0.8**	**0.8**
Denmark	**2.3**	**2.5**
Finland	**4.2**	**4.3**
France	**2.2**	**2.2**
Germany	**4.2**	**4.8**
Ireland	**2.2**	**2.3**
Japan	**27.0**	**26.4**
New Zealand	**3.2**	**3.6**
Norway	**2.2**	**2.6**
Sweden	**4.0**	**4.6**
Switzerland	**4.7**	**4.3**
United Kingdom	**3.3**	**3.2**
United States	**3.7**	**4.3**
North America	**2.6**	**3.0**
European Union	**2.3**	**2.5**
Nordic countries	**3.3**	**3.7**

Source: OECD, EAS (MSTI database), November 1998,

Annex 2. Patent applications from Norwegian primary applicants (N=11,183), by technical field of patent



Annex 3: Patentsøknader i Norge etter opprinnelsesland og område. 1993-2000.

land	N/A	Elektr.tekn.	Instrumenter	Kjem./Farm	Prossesstekn	Maskin/Mek	Konsumvarer	Bygg og anlegg	Total*	Prosent
Danmark	**4**	**52**	**95**	**375**	**93**	**156**	**29**	**76**	**880**	**2**
Finland	**5**	**557**	**87**	**184**	**158**	**193**	**100**	**109**	**1 393**	**3**
Frankrike	**24**	**279**	**325**	1 331	**326**	**340**	**69**	**192**	**2 886**	**6**
Japan	**22**	**306**	**108**	**913**	**116**	**148**	**28**	**27**	**1 668**	**4**
Nederland	**9**	**95**	**167**	**516**	**143**	**156**	**27**	**193**	**1 306**	**3**
Norge	**25**	**1 069**	**1 126**	**794**	**858**	**3 347**	**1 097**	**1 508**	**9 824**	21
Storbritannia	**19**	**311**	**264**	1 108	**281**	**375**	**55**	**240**	**2 653**	**6**
Sveits	**13**	**117**	**179**	**861**	**172**	**401**	**64**	**85**	**1 892**	**4**
Sverige	**8**	**735**	**332**	**530**	**425**	**517**	**127**	**257**	**2 931**	**6**
USA	**99**	**949**	**1 629**	5 791	**1 223**	**1 062**	**251**	**1 353**	**12 357**	26
Andre land	**74**	**855**	**760**	3 881	**1 091**	**1 348**	**334**	**616**	**8 959**	**19**
Total	**302**	**5 325**	**5 072**	**16 284**	**4 886**	**8 043**	**2 181**	**4 656**	**46 749**	**100**

Source: Step-group and 'Patentstyret'

Annex 4A. Number of Applications (1995-1999) per 100 Norwegian Enterprises, by industrial activity (1) and size (2).

1. By industrial activity

1995-1999	TOTAL
BASIC SERVICES	**1**
BUSINESS SERVICES	**4**
ELECTRICAL EQUIPMENT	**19**
ICT AND POSTAL SERVICES	**3**
MACHINERY & EQUIPMENT	**22**
MANUFACTURE	**8**
NATURAL RESOURCES	**0**
OFFSHORE OIL AND GAS	**60**
PUBLIC & UIH SERVICES	**0**
R&D SERVICES	**120**
UNKNOWN	**31**
TOTAL	**6**

2. By size

1995-1999	TOTAL
LARGE	**40**
MEDIUM	**5**
SMALL	**2**
MICRO	**1**
TOTAL	**6**

Annex 4B. Number of Trademark Applications (1995-1999) per 100 Norwegian Enterprises, by industrial activity (1) and size (2).

1. By industrial activity

1995-1999	TOTAL
BASIC SERVICES	7
BUSINESS SERVICES	9
ELECTRICAL EQUIPMENT	21
ICT AND POSTAL SERVICES	44
MACHINERY & EQUIPMENT	8
MANUFACTURE	20
NATURAL RESOURCES	1
OFFSHORE OIL AND GAS	13
PUBLIC & UIH SERVICES	2
R&D SERVICES	60
UNKNOWN	7
TOTAL	8

2. By size

1995-1999	TOTAL
LARGE	104
MEDIUM	17
SMALL	8
MICRO	3
TOTAL	8

Hammersborg torg 3, N-0179 Oslo,
Norway
Telephone +47 2286 8010
Fax: +47 2286 8049
Web: http://www.step.no/

STEP-gruppen ble etablert i 1991 for å forsyne beslutningstakere med forskning knyttet til alle sider ved innovasjon og teknologisk endring, med særlig vekt på forholdet mellom innovasjon, økonomisk vekst og de samfunnsmessige omgivelser. Basis for gruppens arbeid er erkjennelsen av at utviklingen innen vitenskap og teknologi er fundamental for økonomisk vekst. Det gjenstår likevel mange uløste problemer omkring hvordan prosessen med vitenskapelig og teknologisk endring forløper, og hvordan denne prosessen får samfunnsmessige og økonomiske konsekvenser. Forståelse av denne prosessen er av stor betydning for utformingen og iverksettelsen av forsknings-, teknologi- og innovasjonspolitikken. Forskningen i STEP-gruppen er derfor sentrert omkring historiske, økonomiske, sosiologiske og organisatoriske spørsmål som er relevante for de brede feltene innovasjonspolitikk og økonomisk vekst.

The STEP-group was established in 1991 to support policy-makers with research on all aspects of innovation and technological change, with particular emphasis on the relationships between innovation, economic growth and the social context. The basis of the group's work is the recognition that science, technology and innovation are fundamental to economic growth; yet there remain many unresolved problems about how the processes of scientific and technological change actually occur, and about how they have social and economic impacts. Resolving such problems is central to the formation and implementation of science, technology and innovation policy. The research of the STEP group centres on historical, economic, social and organisational issues relevant for broad fields of innovation policy and economic growth.